IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re Patent application of:

Applicant(s):	Raghu Raghavan et al.
Serial No:	10/771,545
Filing Date:	February 5, 2004
Title:	METHOD AND SYSTEM FOR PREDICTION AND MANAGEMENT OF MATERIAL AND INFORMATION TRANSPORT IN AN ORGANISM

Examiner:	Dennis Rosario
Art Unit:	2624
Docket No.	SCHWP0212US

REPLY TO EXAMINER'S ANSWER

Mail Stop Appeal Brief-Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

The following comments are presented in response to the various contentions of

the Examiner set forth in the Examiner's Answer.


I.   *Dynamic Map*

In commenting on the dynamic map being ***communicatively coupled to the***

active entities as claimed, the Examiner states

> *Allen* does describe creating a dynamic map by creating a
> pathway corresponding to a "map" in Col. 5, lines 52-54 that
> is coupled to an animation in figures 11 or 15 that shows
> active entities or elements as shown in fig. 11 as "active
> PKA" so as to provide information that helps ***communicate***

> ***features in the pathway to a viewer looking at the
> display of the animation***.[1]

Providing information ***to a viewer***, however, is not claimed. Instead, claim 1 recites "the dynamic map is communicatively coupled to the active entities ***to provide information thereto***". The term "thereto" as used in claim 1, refers to the "active entities". No reference is made to a "viewer" in claim 1.

Regarding the Examiner's reference to Figs. 11 and 15, these figures are reproduced below.

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FIGURE 11

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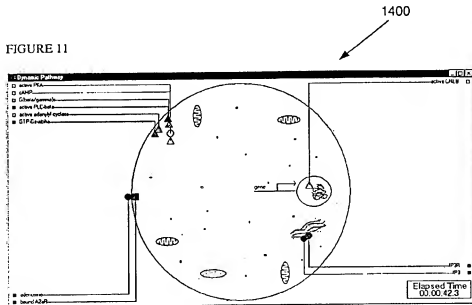
[1] Page 14, third paragraph from the bottom of the Examiner's Answer (emphasis added)

Fig. 15

5120
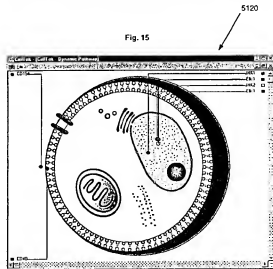
Assuming that the text in the upper left of Fig. 11 (i.e., active PKA, cAMP, etc.) and upper right of Fig. 15 (i.e., JNK1, JNK2 and Elk-1) are considered to be active entities, then at best Figs. 11 and 15 provide information *about* the active entities. There is no indication, however, that the map is ***communicatively coupled*** to the alleged active entities (i.e., active PKA, JNK1 JNK2, Elk-1) so as to provide information ***to*** the active entities, nor does the Examiner provide *reasonable* explanation how Figs. 11 and 15 provide information ***to*** the alleged active entities. Thus, Figs. 11 and 15 of *Allen* are not understood to teach or fairly suggest a dynamic map that includes a list of active entities, wherein the dynamic map is communicatively coupled to the active entities so as to ***provide information thereto***, as recited in claim 1.

II.   First Data Set of Active Entities

While addressing whether *Allen* discloses creating a first data set of entities between which information is transferred, the Examiner states

> two points as discussed in the text of Fig. 8A:"staring [sic] and ending points" can be a set of two points where

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> information is transferred between the two points such as a
> reactant with a mobility attribute of fig. 6F:4030 including a
> velocity constant as shown in fig. 40 as "Vmax" that moves
> between the points.[2]

To the extent the start and end points are considered entities, the Examiner has not

indicated where in *Allen* it is disclosed that "attributes", such as Vmax, are transferred

between such points, nor has *Allen* been found to teach such transfer of attributes.
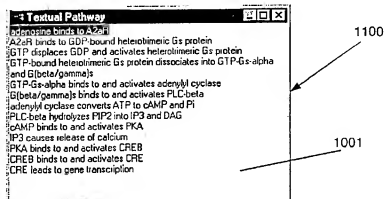
III.   Second Data Set of Channels

In response to Appellant's comment that *Allen* does not show a second data set

of channels, the Examiner states

> *Allen* discloses pathways one of which is shown in Fig.
> 9:"Textual Pathway" that describes how entities such as
> GTP-Gs-alpha binds to or connect to other entities such as
> adenylyl cyclase.[3]

Fig. 9 of *Allen* is reproduced below.

FIGURE 9

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[2] Page 16 of the Examiner's Answer

[3] Page 17, last paragraph of the Examiner's Answer

Although not clear, it appears that the Examiner considers the "textual pathway" as a data set of channels. While Fig. 9 describes various reactions (e.g., adenosine binding with A2aR, etc.), such reactions are not understood to be a *channel connecting the entities*. There is no indication in Fig. 9 that a channel is present, nor what such channel may be. All that is provided is an indication that reactants bind, displace, activate, etc.

The Examiner then further states that he "has concluded that a pathway and a channel are the same since both share the same features of ***directing movement in the intended direction*** of the channel or pathway".[4] Fig. 9, as discussed above, describes how reactants react with one another. In this sense, the "textual pathway" of Fig. 9 is understood as describing the interaction between reactants. Fig. 9, however, is not understood to disclose "directing movement in the intended direction" as stated by the Examiner. Accordingly, the Examiner's conclusion that the "textual pathway" of *Allen* is the same as a channel is not reasonable.

IV. *Inherent feature of pathway*

In response to Appellant's comments that the Examiner has not established that the entities between which material or information is transferred are inherent features of a pathway, the Examiner states that

> since the entities or said points between which material or
> reactants is transferred via the mobility attribute are inherent
> features of a pathway since one of ordinary skill in the art of

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[4] Page 18, second paragraph of the Examiner's Answer (emphasis added)

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> pathways will readily determine a start and end of a pathway.[5]

It is not seen how this establishes that it is "inherent" that the *entities* are inherent features of a pathway. Regarding the Examiner's comment with respect to the material or reactants being transferred via the "mobility attribute", as discussed above, the "mobility attribute" may describe how a reactant will move during a reaction, but *Allen* is not understood to teach or suggest that any attribute, let alone the "mobility attribute", is *transferred* between reactants (i.e., the alleged entities) or *transfers* material between reactants.

Further, the Examiner continues to equate a point on a pathway to an *entity* as claimed.[6] Equating a point on a pathway to an entity is not a reasonable interpretation of a point. A point is a location in space (e.g., two or three dimensional space). Something may occupy the location of a point on a pathway, but the point itself cannot be reasonably interpreted as an entity between which material or information is transferred. Moreover, *Allen* provides no discussion of a point on a pathway being anything related to an entity.

V.   *Third data set of types of materials or information transferred by each entity*

As noted above, the Examiner identifies A2aR, adenosine, MEKK1 and a "starting point" on a pathway as examples of entities. In identifying the third data set of

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[5] Page 18, paragraphs 7 and 8 of the Examiner's Answer

[6] See, e.g., page 18, second last paragraph of the Examiner's Answer

types of material or information that each entity transfers via each channel as claimed, the Examiner states he disagrees with Appellant's position, "since Allen teaches four attribute types in fig. 4B:221a-d of materials".[7] The Examiner does not further elaborate on these attributes, but presumably the Examiner interprets the attributes as being information that each entity transfers via each channel. Figs. 4A-4D are reproduced below.
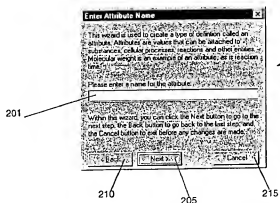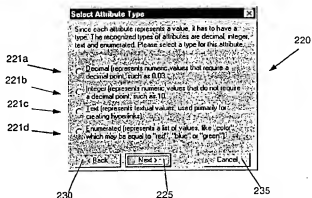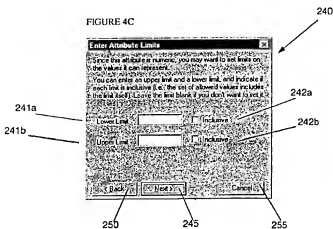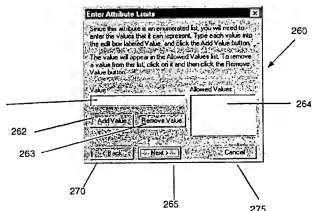

FIGURE 4A

FIGURE 4B

FIGURE 4C

FIGURE 4D

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[7] Page 19, third paragraph of the Examiner's Answer

As disclosed in *Allen*, an attribute is a property of a concept or event.[8] Fig. 4A allows a user to define an attribute by name, and Fig. 4B pertains to declaring the data type (i.e., decimal, integer, text and enumerated) of the attribute. After defining the attribute name and data type, the user is prompted with another screen (e.g., Figs. 4C and 4D), which allow the user to define limits associated with the attribute. So in summary, Fig. 4A allows a user to define an attribute, Fig. 4B allows the user to define the type of data the attribute represents, and Figs. 4C-4D allow the user to define limits of the attribute. Figs. 4A-4D do not indicate how such attributes are transferred between reactants or points (i.e., the alleged entities), nor does the Examiner elaborate how such transfer occurs. Further, *Allen* has not been found to discuss such transfer of attributes to entities. Instead, *Allen* provides that the attributes are used by the ***inference engine*** of the ***simulation module***.[9] According to *Allen*,

> the Simulation Module 10 utilizes information provided by the Database 80 and by Users 20. The Inference Engine 14 of the Simulation Module 10 then processes the information to predict pathways.[10]

Use of such information (which includes the attributes) is insufficient to teach that the attributes are ***transferred between entities*** (in the context of the Examiner's rejection, information transferred between A2aR, adenosine, MEKK1 or points).

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[8] Column 7, line 64 of *Allen*

[9] Column 5, lines 32-35 of *Allen*

[10] Column 8, lines 49-52 of *Allen*

The Examiner, in response to the statement that *Allen* has not been shown to teach creating a third data set of types of material or information that each entity transfers via each channel, disagrees and states that

> since *Allen* discloses an attribute type corresponding to the mobility attribute that describes an entity or reactant that transfers a portion via the dissociation constant of the reactant to another reactant in a pathway.[11]

As best understood, it appears the Examiner feels the mobility attribute is evidence of the transfer of material between the alleged entities. As discussed above, attributes (including the mobility attribute) are not understood to be transferred between the alleged entities or to transfer information to the alleged entities. Instead, these attributes are used by the inference engine of the to predict pathways, for example.

Allen is not understood to disclose *creating a third data set of types of material or information that **each entity transfers** via each channel.*

VI. *Using the Dynamic Map in Conjunction with the First, Second and Third Data Sets to Perform a Simulation*

In response to Appellant's comment that *Allen* does not disclose using the dynamic map in conjunction with the first, second and third data sets to perform a simulation, the Examiner disagrees "since *Allen* uses said dynamic graphical display

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[11] Page 20, first paragraph of the Examiner's Answer

with pathways or animation of pathways created via a "Finish" button in fig. 8E:1005".[12]

The Examiner also states the following.

> *Allen* uses the dynamic map or said animation corresponding to figures 11 and 15 where the dynamic map is based on said first (fig. 6F:4020), second (fig. 9: Textual Pathway) and third data sets (said attribute types in fig. 4B: Select Attribute Type).[13]

It is respectfully submitted that the "dynamic graphical display" (i.e., the alleged dynamic map) as well as the textual map are **_outputs_** of the simulation module of *Allen*, and **_not used to perform the simulation_** as alleged by the Examiner. Specifically, *Allen* provides the following.

> **_The Simulation Module 10 may also generate a dynamic graphical display_** of a "virtual cell" with the pathways that are created with the input information. This dynamic graphical display may be for forward pathway generation. The dynamic graphical display may also be a "virtual" three-dimensional cell. A User 20 may utilize the dynamic graphical display to navigate through the virtual three-dimensional cell.[14]

> **_The Simulation Module 10 may additionally generate a written or textual display of the pathway interactions_**. Such a display may be generated in a display window. The Simulation Module 10 may also communicate information to the Output Module 60 to be used to generate further types of output or results. In a preferred embodiment of the present

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[12] Page 20, third paragraph of the Examiner's Answer

[13] Page 21, first paragraph of the Examiner's Answer

[14] Column 5, lines 57-62 of *Allen* (emphasis added) - reference to the dynamic graphical display is understood to be Fig. 15 (i.e., the alleged dynamic map)

invention, the Output Module 60 creates a written display of
the pathway interactions in a text file.[15]

Clearly, the dynamic graphical display (Fig. 15) and the textual pathway (Fig. 9) of *Allen*
are ***outputs of the simulation***. In other words, the dynamic graphical display (i.e., the
alleged dynamic map[16]) and the textual pathway (i.e., the alleged entities between
which information is transferred[17]) are ***not used to perform the simulation***, but instead
are results of the simulation.

Accordingly, *Allen* does not teach or suggest using the dynamic map in
conjunction with the first, second and third data sets to perform a simulation of the
transfer of material or information between entities as claimed.

The Examiner also states that the claimed limitation of "using the dynamic map
in conjunction with the first, second and third data sets **to perform a <u>simulation</u> of the
transfer of material between entities** (emphasis in original) does not have an active
step of "transfer" of material between entities. It is not seen why this is relevant. The
claimed limitation requires using the ***dynamic map*** in conjunction with the ***first,
second and third data sets*** to ***perform a simulation*** of the transfer of material. *Allen*
clearly does not teach using the alleged dynamic map and the alleged first, second and
third data sets to perform such simulation. Thus, the limitation is not met and it is

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[15] Column 6, lines 7-15 of *Allen* (emphasis added) - reference to the textual display is understood
to be Fig. 9 (i.e., the alleged second data set of channels)

[16] Page 15, fourth paragraph from the bottom of the Examiner's Answer

[17] Page 16, first full paragraph, page 16 last paragraph-page 17 first paragraph of the Examiner's
Answer

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irrelevant wither or not "an active step of transfer of material between entities" is recited in claim 1.

With respect to the Examiner's comment that "Allen's pathways are simulated using a dynamic map (or said animation of figures 11 and 15 or static pathway of figure 14 that shows pathways as a map would show)"[18], reference is again made to column 5, lines 57-62 and column 6, lines 7-15 of *Allen*, which expressly disclose that the dynamic map is an *output of the simulation* and not used to perform the simulation as alleged by the Examiner. Regarding the "static pathway", Allen provides the following

> The Simulation Module 10 may generate a *static graphical display* via the Graphical User Interface 12. The static graphical display may be a display which *shows the pathways* created with the input information.[19]

Thus, both the dynamic graphical display and the static pathway are products of the simulation module, and not used in performing the simulation.

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[18] Page 22, first paragraph of the Examiner's Answer

[19] Column 5, lines 44-51, emphasis added

Conclusion

In view of the foregoing, appellant respectfully submits that the claims are patentable over the applied art and that the final rejection should be reversed.

Respectfully submitted,

RENNER, OTTO, BOISSELLE & SKLAR, L.L.P.

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By: _____

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